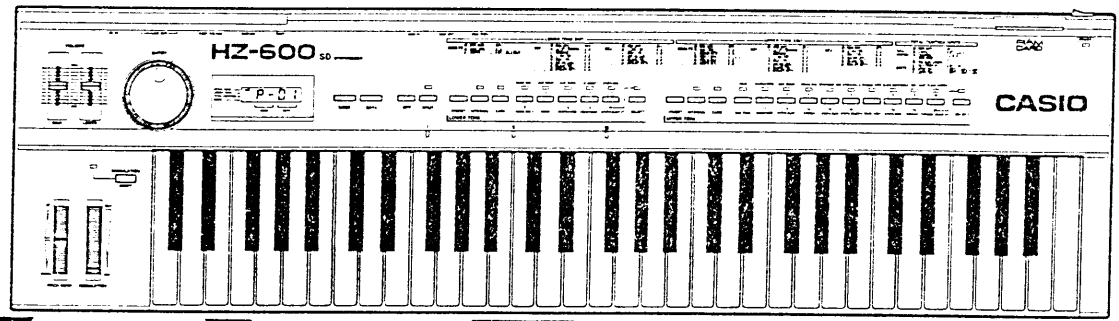
CASIO

HZ-600

ELECTRONIC MUSICAL INSTRUMENT
INSTRUMENTO MUSICAL ELECTRONICO



OPERATION MANUAL 5

MANUAL DE OPERACION 39

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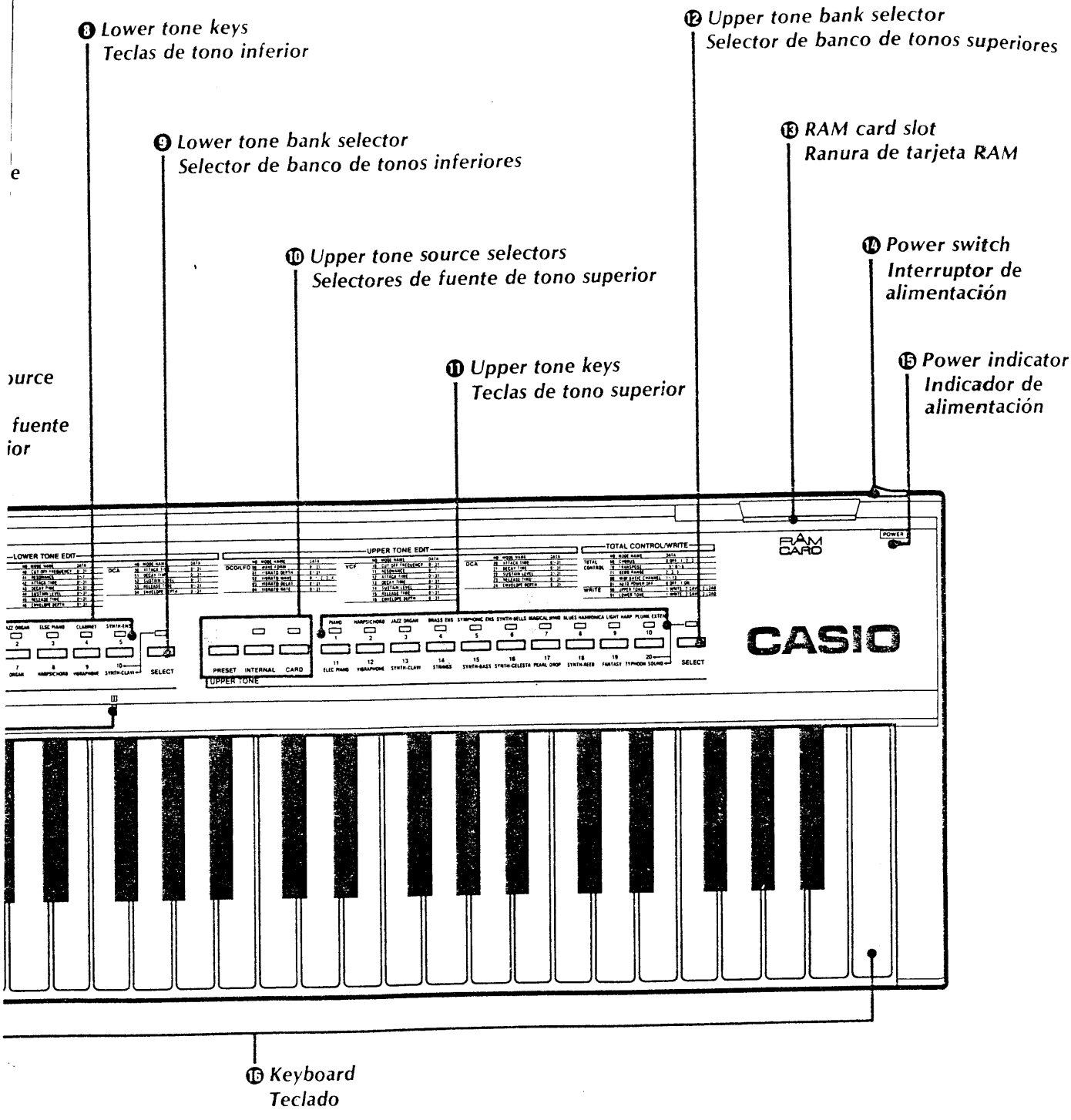
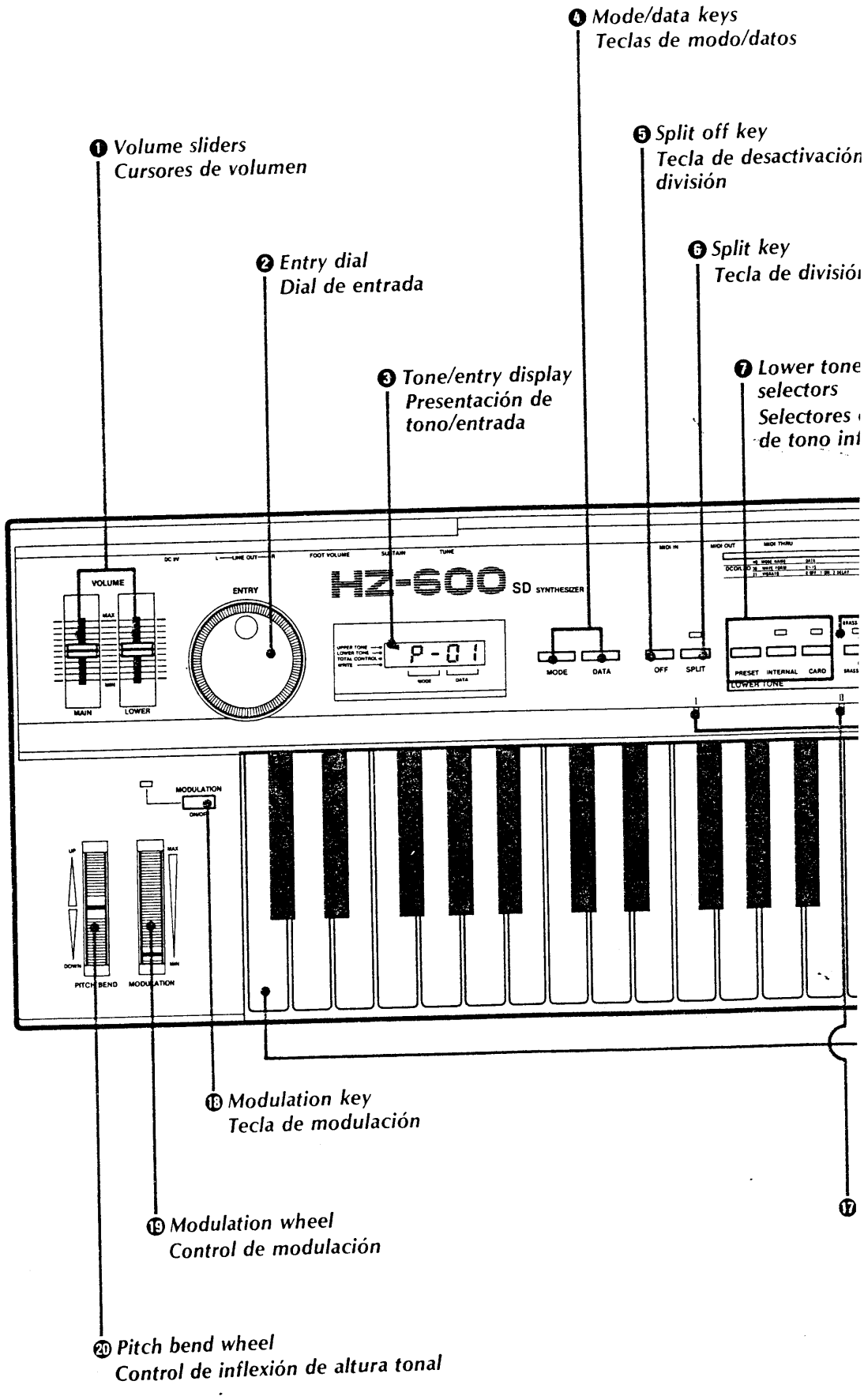


lit point indicators
dicadores de punto de división


❹ Mode/data keys
Teclas de modo/datos
❶ Volume sliders
Cursores de volumen
❺ Split off key
Tecla de desactivación
división
❷ Entry dial
Dial de entrada
❻ Split key
❸ Tone/entry display
Presentación de
tono/entrada
❼ Lower tone
selectors
Selectores
de tono in
HZ-600 SD SYNTHESIZER
VOLUME
ENTRY
MODE
DATA
OFF
SPLIT
MAIN
LOWER
MODULATION
PITCH BEND
MODULATION
❽ Modulation key
Tecla de modulación
❾ Modulation wheel
Control de modulación
❿ Pitch bend wheel
Control de inflexión de altura tonal

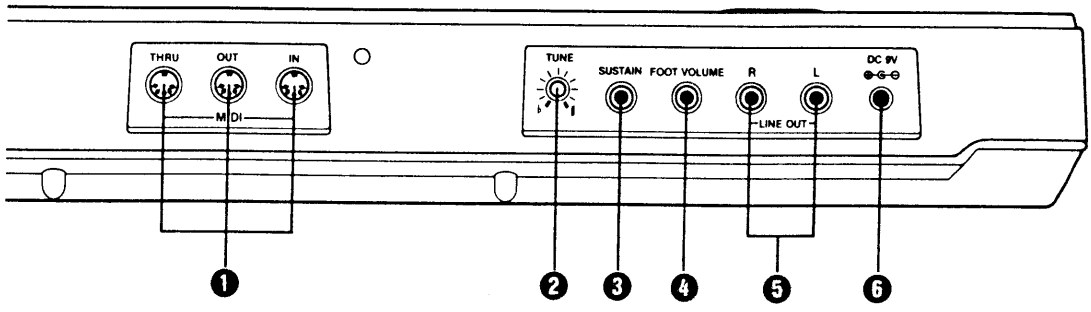
1 Features & Functions

Refer to the fold out connected to the first page of this manual for a detailed illustration of the HZ-600.

❶ Volume sliders
Used to control overall volume (main) and lower tone volume.
❷ Entry dial
Used to specify mode and data parameters.
❸ Tone/entry display
Display values specified via entry dial or selected timbre No.
❹ Mode/data keys
Used to enter programming mode and data channels.
❺ Split off key
❻ Split key
❼ Lower tone source selectors
Used to specify lower tone mode — preset, internal or card.
❽ Lower tone keys
Used to select lower tone timbre within specified tone source and tone bank.
❾ Lower tone bank selector
Used to select lower tone bank within specified tone source.
❿ Upper tone source selectors
Used to specify upper tone mode — preset, internal or card.
⓫ Upper tone keys
Used to select upper tone timbre within specified tone source and tone bank.
⓬ Upper tone bank selector
Used to select tone bank (1 — 10 or 11 — 20) within specified tone source.
⓭ RAM card slot
Port used to connect optional RAM card (RA-100).
⓮ Power switch
⓯ Power indicator
⓰ Keyboard
61 keys. Features 3 keyboard split points.
⓱ Split point indicators
Indicate the points where the keyboard split function divides the keyboard.
⓲ Modulation key
Turns modulation ON, allowing control via modulation wheel.
⓳ Modulation wheel
Used to control depth of modulation when modulation is ON.
⓴ Pitch bend wheel
Used to bend the pitch of notes, up or down.

2 Basic Connections

(Rear panel)



❶ MIDI terminals
Used to receive/transmit MIDI messages.

❷ Tuning control
Adjusts pitch of entire keyboard within ±50 cents.

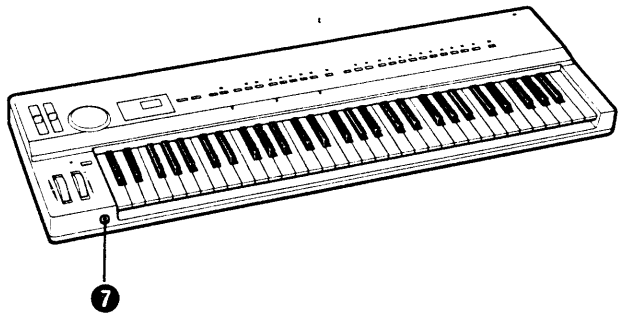
❸ Sustain jack
Used to connect optional external sustain pedal (SP-2, optional).

❹ Foot volume jack
For connection of optional foot volume pedal (VP-2, optional).

❺ Output jacks (R/L)
For connection to external keyboard amplifier or audio equipment.

❻ AC adaptor jack
For connection of optional AC adaptor (AD-5/CA-5, optional).

❼ Headphone jack
For connection of optional headphones (CP-2, optional).



3 Power Supply

This unit operates on both AC and DC power.

DC power

- **Dry batteries**
  This unit can be powered by six D size (SUM-1) manganese dry batteries. Weakened batteries will result in lower volume or poor tonal quality. The power indicator lamp will gradually lose its brightness when battery power weakens. At this time, change batteries or shift to one of the alternate power sources mentioned below.

Battery replacement:

① Open the battery compartment cover on the bottom of the unit and take out used batteries.

② Load new batteries taking care that polarity is correct.

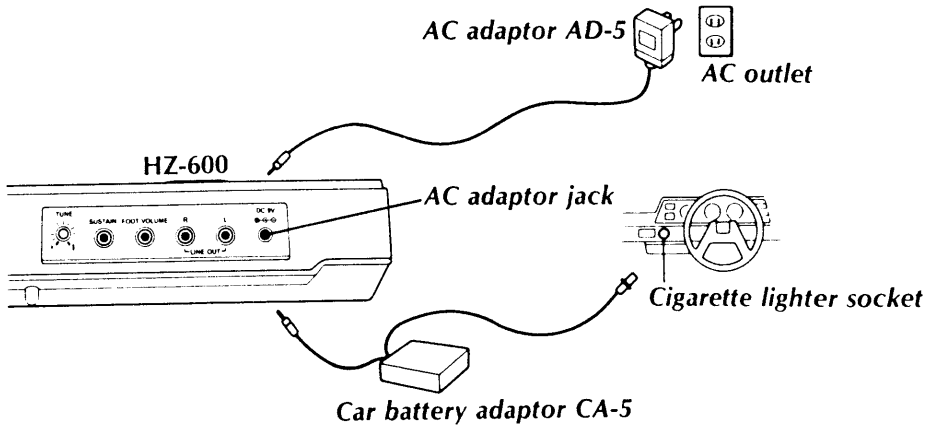
* *It is advisable to replace all six batteries at the same time for longer battery life.*

* *Refer to the specifications for standard battery life.*

- **Car battery**
  With the car battery adaptor (CA-5, optional), DC power is supplied from a car battery through the cigarette lighter socket.

AC power

An AC adaptor (AD-5, optional) is required to connect to an AC outlet. Use only an adaptor with the same voltage rating (100, 117, 220, or 240V) as the power supply in your area to prevent component damage. Plug the AC adaptor into the AC outlet and the cord into the unit. This will automatically cut off the battery power supply.



★ Auto power off function

Power is automatically cut off approximately 6 minutes after the last operation of the unit. Power supply can be restored by switching power OFF and then ON again.

CAUTION

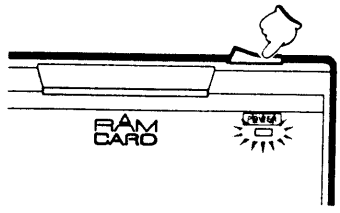
* Use only genuine CASIO adaptors to avoid risk of damage.
* Remove batteries from the battery compartment when the unit is not used for extended periods. (Battery leakage can damage electrical parts.)
* The adaptor may become warm when left connected to an outlet. This is normal, but the adaptor should be disconnected when not in use.
* THE FOLLOWING CONDITIONS CAN CAUSE BATTERIES TO BURST:
  1. *Use of adaptors other than genuine CASIO adaptors.*
  2. *Loading batteries with polarities reversed.*

4 Basic Operations

[How to make music on the HZ-600]

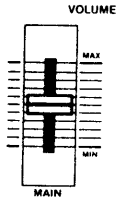
①Turn the power ON.

- After selecting the power source you intend to use and making necessary connections, switch power ON.
- The power indicator will light. Immediately after the power is turned ON, the "PIANO" tone (timbre) is automatically selected.



②Adjust the volume.

- Using the main volume slider, adjust the main volume to an appropriate level.



Now, go ahead and get a feel for the HZ-600 keyboard. Notice that in this initialized mode, the PIANO tone sounds on all keys of the keyboard.

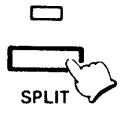
■KEYBOARD SPLIT FUNCTION■

The HZ-600's Keyboard split function is used in a variety of ways, for various effects.

[How to select keyboard split]

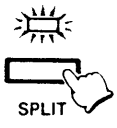
Press the split key. In this keyboard split mode, the keyboard is "split" into upper tone and lower tone section.

**Different tones may be specified for each section.*



[Changing keyboard split point]

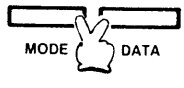
The HZ-600 features 3 different keyboard split points, which are indicated by red LEDs. The split point can be altered by pressing the "SPLIT" key after the "SPLIT" LED is already lit.



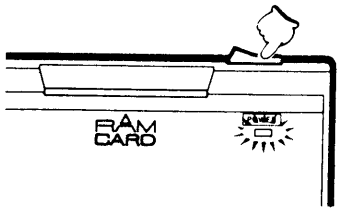
[INITIALIZATION]

To initialize data (return all operations to factory preset state):

①Turn power OFF.



②Hold down mode key and data key, and turn power ON.

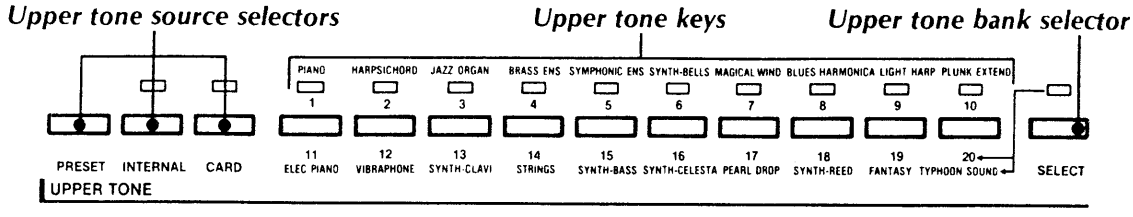


5 Keyboard Tones

[UPPER TONE]

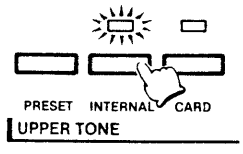
The HZ-600 is equipped with 20 factory preset tones, plus 20 internal tones. An additional 120 tones can be utilized through the use of an optional RAM card (RA-100). The tones can be selected by pressing any of the tone keys after specifying a tone source and tone bank within the tone source.

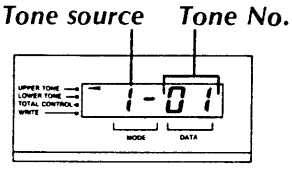
**When power is turned ON, "PIANO" is automatically selected.*


Upper tone source selectors
Upper tone keys
Upper tone bank selector
PIANO HARPSICHORD JAZZ ORGAN BRASS ENS SYMPHONIC ENS SYNTH-BELLS MAGICAL WIND BLUES HARMONICA LIGHT HARP PLUNK EXTEND
1 2 3 4 5 6 7 8 9 10
PRESET INTERNAL CARD
11 ELEC PIANO 12 VIBRAPHONE 13 SYNTH-CLAVI 14 STRINGS 15 SYNTH-BASS 16 SYNTH-CELESTA 17 PEARL DROP 18 SYNTH-REED 19 FANTASY 20 TYPHOON SOUND
SELECT
UPPER TONE

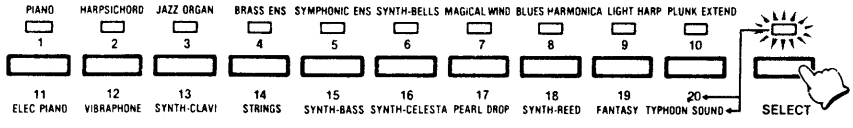
■ SELECTING A KEYBOARD TONE ■

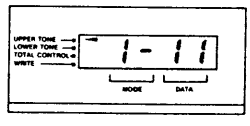
①Specify the tone source to be used by pressing a tone source selector ("PRESET" or "INTERNAL" if RAM card is not in use).



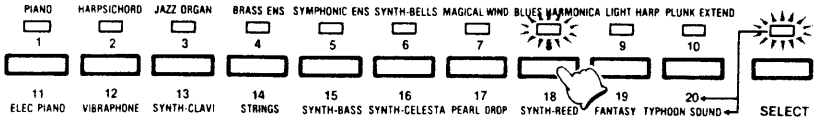


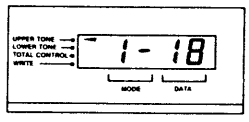
- The upper tone bank (tones 1 through 10) is selected when the tone bank "SELECT" key is off. To specify the lower bank press the key so that the LED lights.


PIANO HARPSICHORD JAZZ ORGAN BRASS ENS SYMPHONIC ENS SYNTH-BELLS MAGICAL WIND BLUES HARMONICA LIGHT HARP PLUNK EXTEND
1 2 3 4 5 6 7 8 9 10
11 ELEC PIANO 12 VIBRAPHONE 13 SYNTH-CLAVI 14 STRINGS 15 SYNTH-BASS 16 SYNTH-CELESTA 17 PEARL DROP 18 SYNTH-REED 19 FANTASY 20 TYPHOON SOUND
SELECT



②Press the tone key corresponding to the desired tone.


PIANO HARPSICHORD JAZZ ORGAN BRASS ENS SYMPHONIC ENS SYNTH-BELLS MAGICAL WIND BLUES HARMONICA LIGHT HARP PLUNK EXTEND
1 2 3 4 5 6 7 8 9 10
11 ELEC PIANO 12 VIBRAPHONE 13 SYNTH-CLAVI 14 STRINGS 15 SYNTH-BASS 16 SYNTH-CELESTA 17 PEARL DROP 18 SYNTH-REED 19 FANTASY 20 TYPHOON SOUND
SELECT



■ INTERNAL TONES ■

Tones listed on the display panel correspond to the "PRESET" sound source. Internal tones are listed below:

Tone Number	Tone Timbre
1	Piano 2
2	Marimba
3	Pipe Organ
4	Strings 2
5	Synth-Ens 1
6	Synth-Vib 1
7	Koto
8	Double Reed
9	Clarinet
10	Miracle

Tone Number	Tone Timbre
11	Elec. Piano 2
12	Vibraphone 2
13	Violin
14	Synth-Strings
15	Synth-Ens 2
16	Synth-Vib 2
17	Synth-Harp
18	Slash Reed
19	Synth-Guitar
20	Explosion

**Edited tone can be written to INTERNAL TONE memory area. Factory preset data (INTERNAL TONE) may be returned, when initialization is done. (Initialization → P. 10)*

■ HOW TO USE CARD TONES ■

Through the use of an optional RAM card (RA-100), an additional 120 upper tones may be added to the HZ-600's timbre data memory. When the RAM card is used for the first time, it must be formatted (see page 35 for details on formatting).

**RAM cards need only be formatted once.*

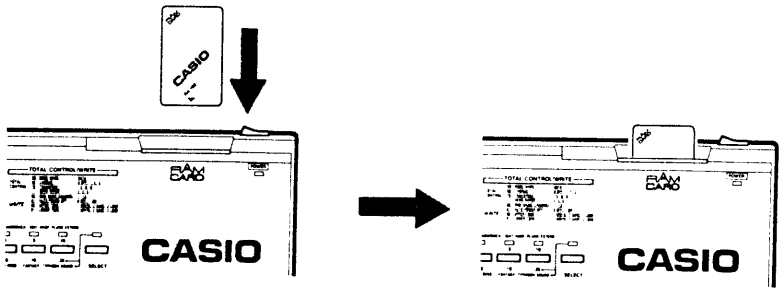
**When the RAM card is formatted, the factory preset internal tones 1 through 20 are input into memory areas 1 through 20 of each bank in the card upper tone memory.*

< OPERATIONS >

①Turn the HZ-600 power OFF.

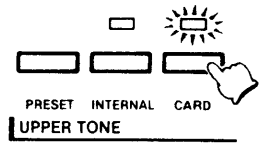
* *Power should always be OFF when inserting or removing the RAM card.*

②Insert the RAM card (RA-100) into the HZ-600 as face up, as shown in the figure below.

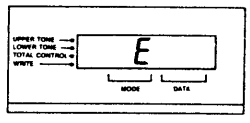


③Turn the HZ-600 back ON.

④ Press the card key of the upper tone source selectors.
- The corresponding indicator lights.



- An error message is shown on the LCD if an unformatted RAM card is inserted and the card key is pressed. Card tones cannot be selected in this state.

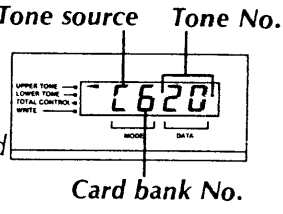


NOTES

Up to 120 upper tone can be held in the RAM card. The memory is divided into 6 different banks, each of which holds up to 20 tones.

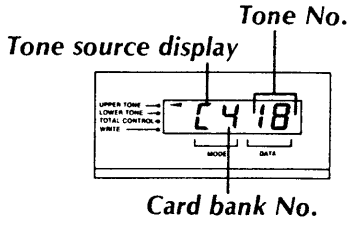
Successively pressing the card key increments the card bank number, from 1 to 2, 3, 4 etc. When the card bank number reaches 6, subsequently pressing the key returns the number to 1.

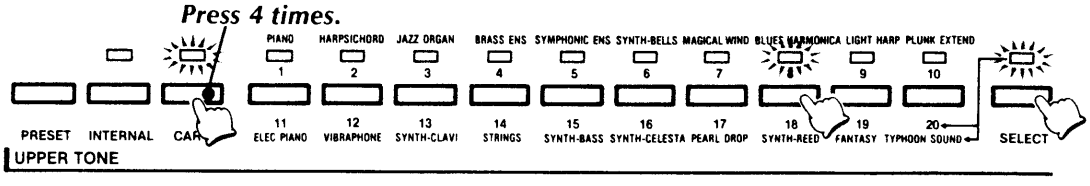
**The card bank No. is set at "1" when HZ-600 power is turned ON.*



⑤ Specify the desired card tone, using the card key, an upper tone key, and the tone bank SELECT key.
- The card bank No. and tone No. of the selected card tone is shown on the LCD.
- When a card tone is selected, the tone source display shows "C" message.

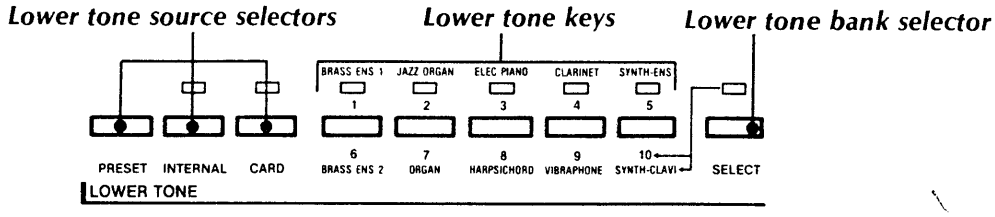
<EXAMPLE>
Select the card tone assigned to Bank 4, Tone 18.





[LOWER TONE]

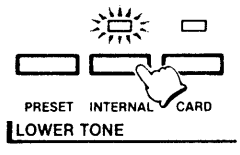
The HZ-600 is equipped wiht 10 factory preset tones, plus 10 internal tones. An additional 60 tones can be utilized through the use of an optional RAM card (RA-100). The tones can be selected by pressing any of the tone keys after specifying a tone source and tone bank within the tone source.

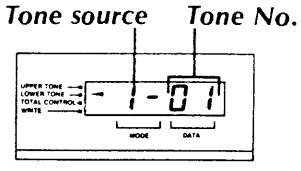


■ SELECTING A KEYBOARD TONE ■

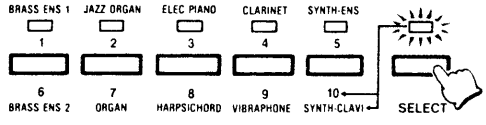
Lower tone is selected in keyboard split mode. (Keyboard split → P. 10)

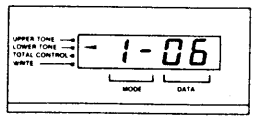
① Specify the tone source to be used by pressing a tone source selector ("PRESET" or "INTERNAL" if RAM card is not in use).



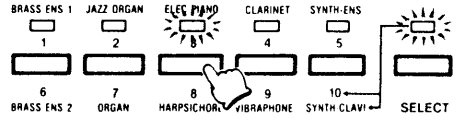


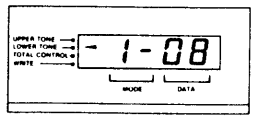
- The lower tone bank (tones 1 through 5) is selected when the tone bank "SELECT" key is off. To specify the lower bank press the key so that the LED lights.





② Press the tone key corresponding to the desired tone.





■ INTERNAL TONES ■

Tones listed on the display panel correspond to the "PRESET" sound source. Internal tones are listed below:

Tone Number	Tone Timbre
1	Strings
2	Jazz Organ 2
3	Piano
4	Funky Clavi.
5	Synth-Reed

Tone Number	Tone Timbre
6	Trumpet
7	Accordion
8	Harpsichord 2
9	Vibraphone 2
10	Metallic Sound

**Edited tone can be written to INTERNAL TONE memory area. Factory preset data (INTERNAL TONE) may be returned, when initialization is done. (Initialization → P. 10)*

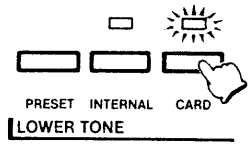
■ HOW TO USE CARD TONES ■

Through the use of an optional RAM card (RA-100), an additional 60 lower tones may be added to the HZ-600's timbre data memory. When the RAM card is used for the first time, it must be formatted (see page 00 for details on formatting).

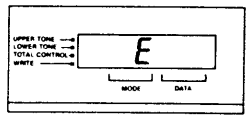
<OPERATIONS>

① Insert the RAM card (RA-100) into the HZ-600 correctly.

② Press the card key of the lower tone source selectors.
- The corresponding indicator lights.



- The card key indicator does not light if a RAM card has not been inserted.
- An error message is shown on the LCD if an unformatted RAM card is inserted and the card key is pressed. Card tones cannot be selected in this state.



NOTES

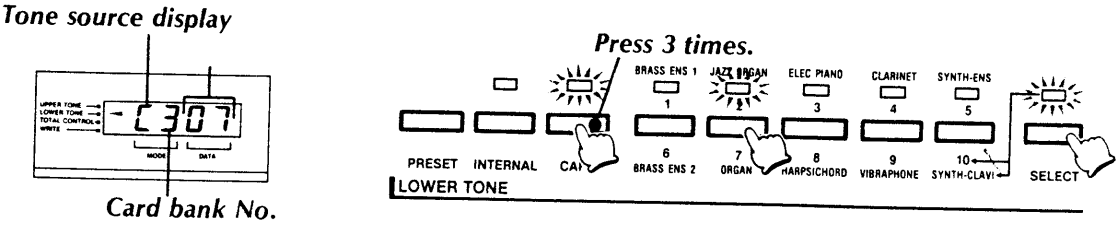
Up to 60 lower tones can be held in the RAM card. The memory is divided into 6 different banks, each of which holds up to 10 tones.
Successively pressing the card key increments the card bank number, from 1 to 2, 3, 4 etc. When the card bank number reaches 6, subsequently pressing the key returns the number to 1.
* *The card bank No. is set at "1" when HZ-600 power is turned ON.*

③ Specify the desired card tone, using the card key, a lower tone key, and the tone bank SELECT key.

- The card bank No. and tone No. of the selected card tone is shown on the LCD.

<EXAMPLE>

Select the card tone assigned to Bank 3, Tone 7.



NOTES

- An additional timbres can be selected by utilizing an optional RAM card (RA-100).
- The "CARD" tone source selector does not function unless a card is in use.
- The above procedures may be performed in any order. Source, bank and tone can be altered freely at any time in this mode.

6 Effect/Total Control

The HZ-600 is equipped with a number of effects and control functions which provide expanded performance possibilities.

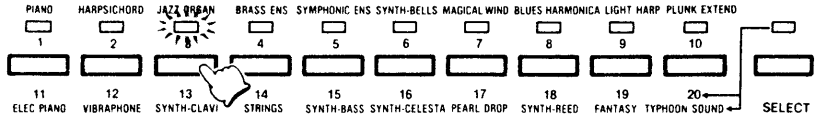
[CHORUS]

A stereo chorus effect adds a natural "breadth" to HZ-600 sounds.

<OPERATIONS>

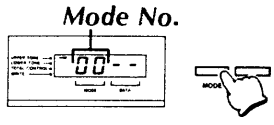
①Select the tone for which you wish to alter the stereo chorus settings by pressing the corresponding upper tone key.

- Stereo chorus is preset individually for each voice.

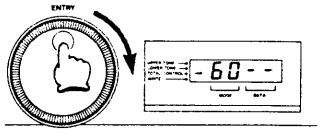


②Press the mode key.

- The Mode No. is displayed.

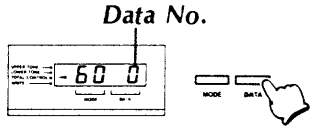


③Select mode No. "60" by turning the entry dial.



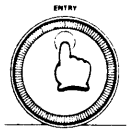
④Press the data key.

- The preset data No. is shown.



⑤Turn the entry dial to turn the stereo chorus OFF or to select chorus depth, according to the following settings:

Data No.: 1.....Stereo chorus OFF
2.....Weak stereo chorus ON
3.....Deep stereo chorus ON
4.....Weak but fast stereo chorus ON



NOTES

- Stereo chorus affects not only upper tones, but lower tones as well when a keyboard split is specified.
- When the data key is pressed at step (3) above, the selected tone No. key's indicator lights. By pressing the tone No. key, you may compare the sound with the original chorus setting and the altered sound.

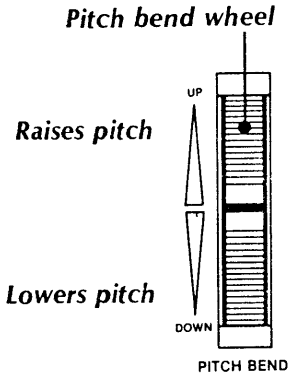
[TUNING CONTROL]

The HZ-600 features a tuning control on the rear panel which can be used to alter the overall tuning of the instrument within a ±50 cent range. This allows easy tuning to other instruments. Turn the controller to the right to raise tuning and to the left to lower tuning.

[PITCH BEND WHEEL]

The HZ-600's pitch bend wheel can be used to raise or lower the pitch of notes during performance. This effect may be used throughout the entire keyboard when no keyboard split specification is made, or in the upper tone keys when key split is ON.

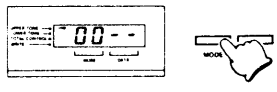
**The pitch bend range may be set using the entry dial.*



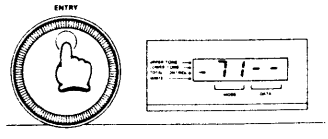
<Altering pitch bend range>

①Press the mode key.

- Mode No. is displayed.

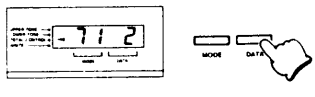


②Specify mode No. "71" using the entry dial.

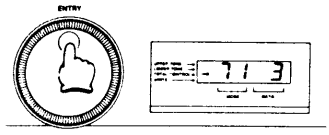


③Press the data key.

- Data No. is displayed.



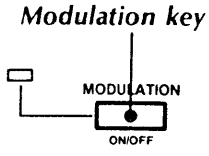
④Enter data "2", "3", or "5" using the entry dial. This data corresponds to the following settings;



<Data No.> <Pitch bend range>

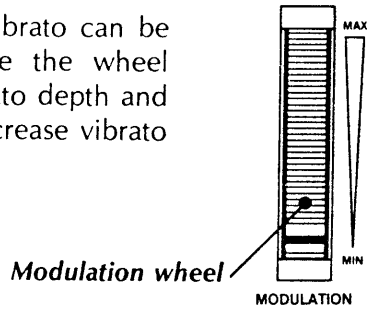
2 .....Major second
3 .....Minor third
5 .....Perfect fifth

**Set to Major second (Data No. "2") when power is turned ON.*



[MODULATION WHEEL]

By pressing the modulation key, upper tone vibrato can be controlled with the modulation wheel. Move the wheel towards the "MAX" position for increased vibrato depth and pull it back towards the "MIN" position to decrease vibrato depth.



**When the modulation key indicator is OFF, vibrato affects sound according to individual preset values.*
**The modulation key indicator automatically turns OFF (turning OFF wheel control) whenever the upper tone selector is altered.*

7 Sound Synthesis

HZ-600 tones are comprised of a variety of "parameters". These parameters control the characteristics of each individual sound, including such elements as timbre, pitch and volume. To edit or synthesize new sounds, the values of these parameters are altered or set to desired levels.
A list of these parameters and the range of values which may be set for them is shown in the parameter index as shown below.

■ SOUND SYNTHESIS TECHNIQUES ■

To create sounds on the HZ-600, you simply change, or "edit" preset timbre programs. The term "program" here refers to the values of all parameters which make up a single tone. Practically speaking, a program may be thought of simply as a tone.
It is not necessary to start with a "blank slate" when creating a new program. The easiest approach is to first select a tone that resembles the one you have in mind, and edit this sound until you get the sound you want. The list below contains descriptions of each parameter stored in memory, and how they effect the sound. Use this as a guide to editing sounds.

■ PARAMETERS STORED IN MEMORY ■

This section describes the various parameters which affect the characteristics of sounds created on the HZ-600.

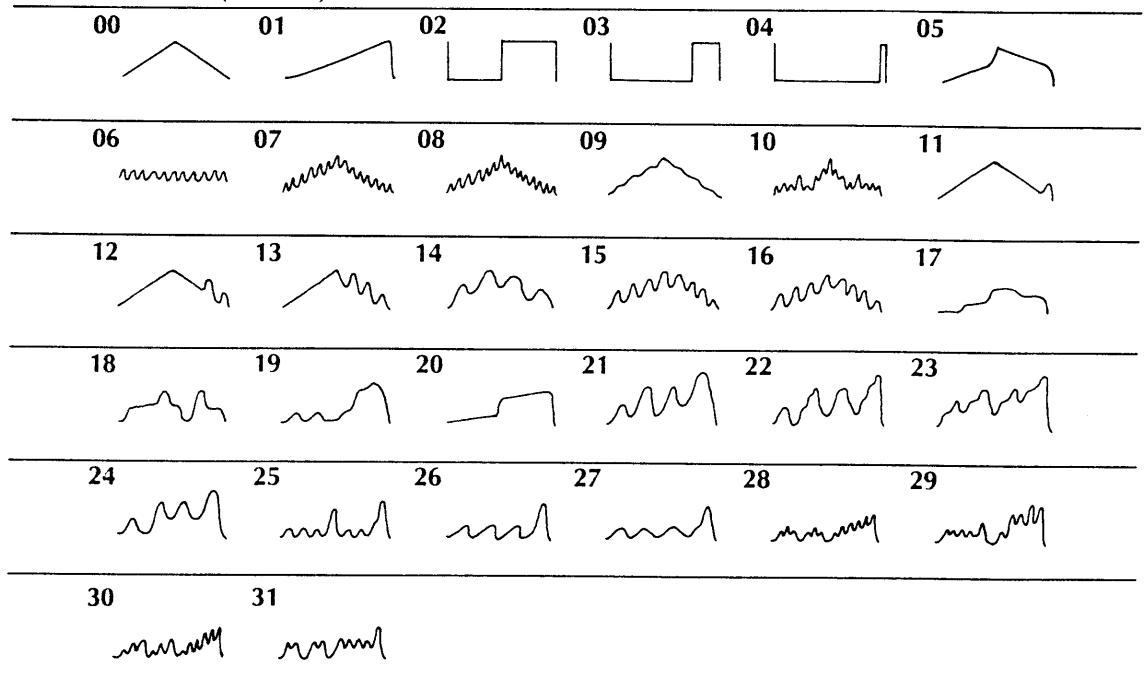
<PARAMETER INDEX>

		Mode No.	Mode Name	Data	Note
UPPER TONE EDIT	DCO/LFO	00	DCO WAVEFORM	0 ~ 31	The choice of waveforms will have more effect on the tonal characteristics (timbre) of the sound than will any other parameters. Practically speaking, DCO waveforms determine the basic instrument "family" which the sound corresponds to.
		01	LFO DEPTH	0 ~ 31	Determines the depth of LFO modulation. This modulation is used in creating vibrato effects.
		02	LFO WAVEFORM	0⌒, 1⌒, 2⌒, 3⌒, 4 RANDOM	Used to select the basic waveform which is used to modulate the LFO.
		03	LFO DELAY	0 ~ 31	Determines the amount of delay following key depression prior to the onset of vibrato or other modulation effects.
		04	LFO SPEED	0 ~ 31	Controls the frequency at which the LFO operates, determining the speed of cyclic pitch or tonal variation.
	VCF	10	CUTOFF FREQUENCY	0 ~ 31	Determines the cutoff frequency of the low-pass filter. The higher the cutoff frequency, the less effect the filters have on the basic waveforms (as more harmonics are passed). At the highest value, all harmonics are passed. As the value becomes lower, more harmonics are cut off so that the sound becomes progressively "rounder," or less bright.
		11	RESONANCE	0 ~ 7	Emphasizes harmonics near the cutoff frequency, producing a peaky or bandpass type of sound. The higher the value, the higher the resonance peak and the more obvious the effect. At or near maximum, the VCFs go into self-oscillation, producing a pure sine wave, which may be used as an additional sound source for special effects.
		12	ATTACK	0 ~ 31	Determines how long it takes for the VCF output voltage to rise from zero to its maximum level. Essentially, attack determines the "quickness" at which a sound's contour (changes in characteristics over time) changes after a note is played on the keyboard.

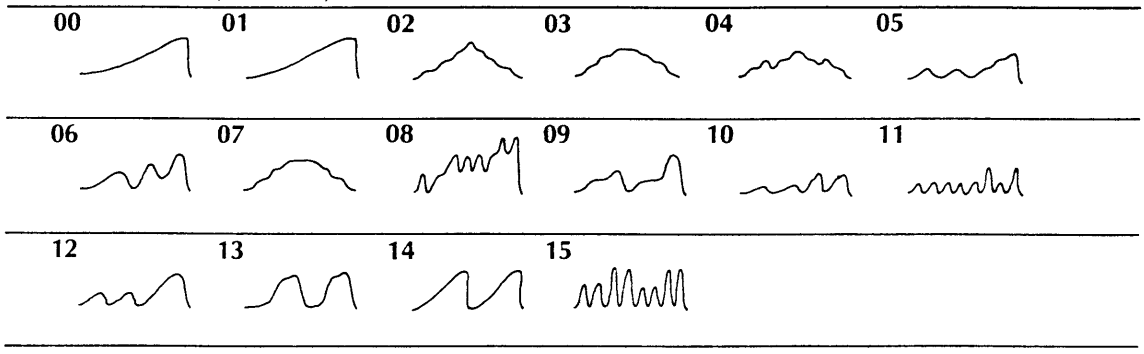
		Mode No.	Mode Name	Data	Note
UPPER TONE EDIT	VCF	13	DECAY	0 ~ 31	Determines the period that it takes for the output voltage to fall from the maximum contour level to the SUSTAIN level.
		14	SUSTAIN	0 ~ 31	The voltage to which the contour decays, assuming that the note is still being played on the keyboard.
		15	RELEASE	0 ~ 31	Release time is the period that it takes for the contour to fall away from the release level to the initial voltage level after the note has been released.
		16	ENV. DEPTH	0 ~ 31	Determines the amount of effect that the VCF has on the overall sound.
	DCA	20	ATTACK	0 ~ 31	Determines how long it takes for the DCA output voltage to rise from zero to its maximum level. Essentially, attack determines the "quickness" at which a sound reaches its maximum volume after a note is played on the keyboard.
		21	DECAY	0 ~ 31	Determines the period that it takes for the output voltage to fall from the maximum contour level to the SUSTAIN level.
		22	SUSTAIN	0 ~ 31	The voltage to which the contour decays, assuming that the note is still being played on the keyboard.
		23	RELEASE	0 ~ 31	Release time is the period that it takes for the contour to fall away from the release level to the initial voltage level after the note has been released.
		24	ENV. DEPTH	0 ~ 31	Determines the amount of effect that the VCF has on the overall sound.
LOWER TONE EDIT	DCO	30	DCO WAVEFORM	0 ~ 15	The choice of waveforms will have more effect on the tonal characteristics (timbre) of the sound than will any other parameters. Practically speaking, DCO waveforms determine the basic instrument "family" which the sound corresponds to.
		31	VIBRATO	0, OFF 1, ON 2, DELAY	
	VCF	40	CUTOFF FREQ.	0 ~ 31	Determines the cutoff frequency of the low-pass filter. The higher the cutoff frequency, the less effect the filters have on the basic waveforms (as more harmonics are passed). At the highest value, all harmonics are passed. As the value becomes lower, more harmonics are cut off so that the sound becomes progressively "rounder," or less bright.
		41	RESONANCE	0 ~ 7	Emphasizes harmonics near the cutoff frequency, producing a peaky or bandpass type of sound. The higher the value, the higher the resonance peak and the more obvious the effect. At or near maximum, the VCFs go into self-oscillation, producing a pure sine wave, which may be used as an additional sound source for special effects.
		42	ATTACK	0 ~ 31	Determines how long it takes for the VCF output voltage to rise from zero to its maximum level. Essentially, attack determines the "quickness" at which a sound's contour (changes in characteristics over time) changes after a note is played on the keyboard.
		43	DECAY	0 ~ 31	Determines the period that it takes for the output voltage to fall from the maximum contour level to the SUSTAIN level.
		44	SUSTAIN	0 ~ 31	The voltage to which the contour decays, assuming that the note is still being played on the keyboard.
		45	RELEASE	0 ~ 31	Release time is the period that it takes for the contour to fall away from the release level to the initial voltage level after the note has been released.
		46	ENV. DEPTH	0 ~ 31	Determines the amount of effect that the VCF has on the overall sound.
	DCA	50	ATTACK	0 ~ 31	Determines how long it takes for the DCA output voltage to rise from zero to its maximum level. Essentially, attack determines the "quickness" at which a sound reaches its maximum volume after a note is played on the keyboard.

		Mode No.	Mode Name	Data	Note
LOWER TONE EDIT	DCA	51	DECAY	0 ~ 31	Determines the period that it takes for the output voltage to fall from the maximum contour level to the SUSTAIN level.
		52	SUSTAIN	0 ~ 31	The voltage to which the contour decays, assuming that the note is still being played on the keyboard.
		53	RELEASE	0 ~ 31	Release time is the period that it takes for the contour to fall away from the release level to the initial voltage level after the note has been released.
		54	ENV. DEPTH	0 ~ 31	Determines the amount of effect that the VCF has on the overall sound.
TOTAL CONTROL	CHORUS	60	CHORUS	0 OFF, 1, 2, 3	Determines level of chorus effect.
	TRANSPOSE	70	TRANSPOSE	− 5 ~ 0 ~ 6	Transposes key (pitch of notes).
	BEND RANGE	71	BEND RANGE	2, 3, 5	Used to set pitch bend range.
	MIDI	80	BASIC CH	1 ~ 15	Used to select Basic Channel and Clock Mode for MIDI communications.
	AUTO POWER OFF	81	AUTO POWER OFF	0, OFF 1, ON	Used to turn auto power off function ON and OFF.
WRITE	TONE	90	UPPER	1 WRITE, 2 SAVE, 3 LOAD	Used to perform programming operations in WRITE mode.
		91	LOWER	1 WRITE, 2 SAVE, 3 LOAD	

<WAVE FORM (UPPER)>



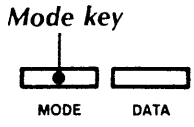
<WAVE FORM (LOWER)>



■ EDITING VALUES ■

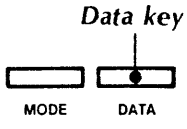
Features & functions for control

- **Mode key**
  Used to specify editing mode.

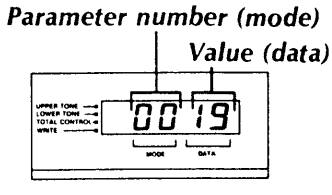


- **Entry dial**
  Used to select parameter and value (data).

- **Data key**
  Used to specify editing of value for selected parameter.



- **Tone/entry display**
  Displays selected parameter number (mode) and value (data).



8 Editing & Writing Tones

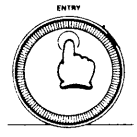
The following procedures describe how to edit tones by altering the values of their parameters, and write them to memory.

■ EDITING TONES ■

①Select the tone to be edited. (Note that upper and lower tones may be edited.)

②Press the mode key.

③Turn the entry dial to select the number of the parameter to be edited. (Refer to parameter index.)

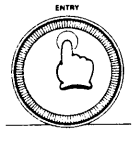


④Press the data key.

- Value display (right side of LCD) varies according to the parameter which is to be edited. This is because the range in which parameters can be edited varies.
- Refer to the parameter index for information on specific range of each parameter.

NOTE: *In place of values, some parameters are controlled by toggles (switches), turning them ON or OFF, or selecting specific effects.*

⑤Turn the entry dial to select the desired value for the selected parameter.



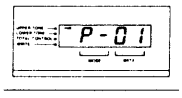
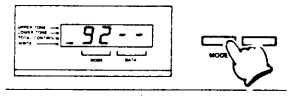
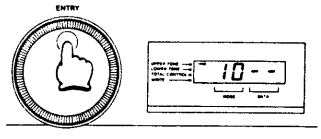
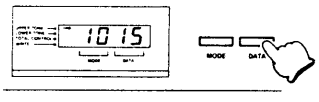
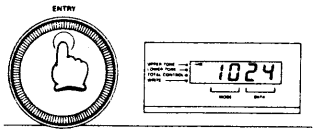
- Note that the LED corresponding to the tone number selected flashes in this mode. This indicates that the edited tone may be "compared" to the initialized tone. Press the tone key and the LED remains lit (does not flash). In this state, the initialized tone sounds on the keyboard, press it again and the LED begins flashing, indicating that the edited tone is specified.

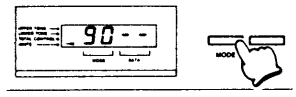
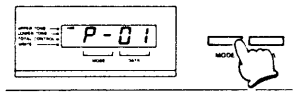
⑥When you are satisfied with the edited tone, press the mode key to exit from the programming mode. You may then edit another parameter by repeating steps (3) through (5).

⑦When you are finished editing desired parameters, press the mode key twice to exit to the tone mode.

<EXAMPLE>

The following is a working example of how to edit an HZ-600 parameter.

Operation	Notes	Display
Alter the cutoff frequency of the melody tone to a value of "24."	Initially, the display indicates tone No. (Select the "PIANO" of preset tone.)	
① Press the mode key.		Previously selected mode displayed. 
② Turn the entry dial so that the left side of the display shows "10."	Note that "10" corresponds to the cutoff frequency parameter for the melody tone.	
③ Press the data key.	Enters value editing mode. LED corresponding to selected tone ("PIANO") flashes.	Previously selected value displayed. 
④ Turn the entry dial so that a value of "24" is shown on the right side of the display.	Preset tone may be changed.* * Preset tone can be recalled by pressing the tone key. When the LED does not flash, preset tone sounds. Press the tone key again, edited tone sounds. (LED flash.)	

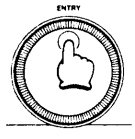
Operation	Notes	Display
⑤ Press the mode key.	Exits from value editing mode. * Turn the dial to select the mode "90" for writing tone. (refer to WRITING TONES)	
⑥ Press the mode key once again.	Returns to tone No. display.	

■ WRITING TONES ■

Upper tone and lower tone edited via the edit procedures may be written to internal or RAM-card memory via the following procedures.

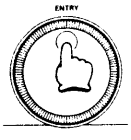
①Press the mode key.

②Turn the entry dial to select the number of the tone to be written (either 90 or 91, corresponding to melody tone and chord tone, respectively).



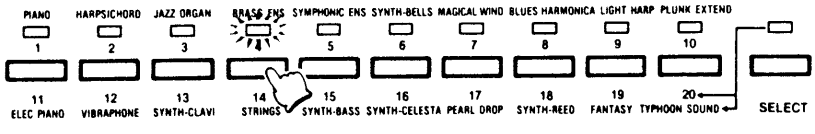
③Press the data key.

④Turn the entry dial to select write mode within the selected tone (DATA 1).
("INTERNAL" (tone source) is automatically selected, when the data key is pressed.)



NOTE: *Press the card key, to specify that tone is to be written to RAM card.*

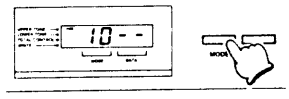
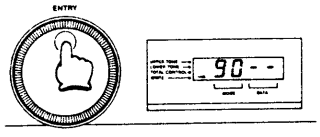
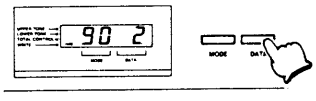
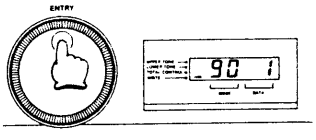
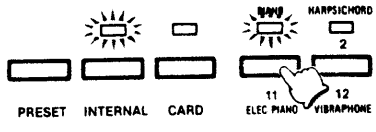
⑤Press the tone key corresponding to the tone into which the edited sound is to be written.



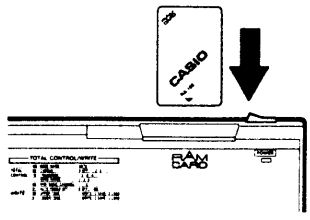
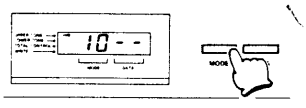
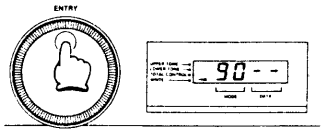
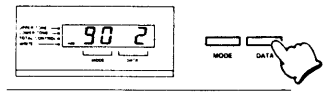
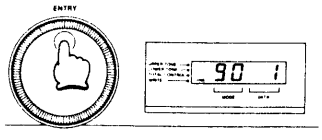
<EXAMPLE>

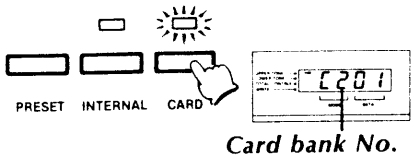
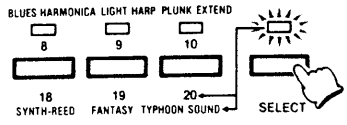
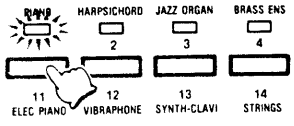
The following is a working example of how to write the tone edited in the edit example to INTERNAL memory or RAM card memory.

<EXAMPLE 1: WRITING TO INTERNAL MEMORY>

Operation	Notes	Display
① Press the mode key after editing a tone.	This operation continue from No. ⑤ in edit procedure on P. 26.	
② Turn the entry dial so that the left side of the display shows "90."	Note that "90" corresponds to the melody tone write parameter values.	
③ Press the data key.	Enters melody WRITE mode. Tone and rhythm LEDs go out and "INTERNAL" (tone source) is selected automatically.	Previously selected value displayed. 
④ Turn the entry dial so that a value of "1" is shown on the right side of the display.	Note that "1" corresponds to WRITE mode within.	
⑤ Press the tone key which is desired to memory.	Tone is written to memory.	Display returns to tone No., LEDs return to normal operating state. 

<EXAMPLE 2: WRITING TO RAM CARD>

Operation	Notes	Display
Write the tone edited in the EDIT example to RAM card memory (No. 11, Card bank No. 2)	RAM card must be inserted in corresponding slot.	
① Press the mode key after editing a tone.	This operation continue from No. ⑤ in edit procedure on P. 26.	
② Turn the entry dial so that the left side of the display shows "90."	Note that "90" corresponds to the melody tone write parameter values.	
③ Press the data key.	Enters MELODY WRITE mode. Tone and rhythm LEDs go out and "INTERNAL" (tone source) is selected automatically.	Previously selected value displayed. 
④ Turn the entry dial so that a value of "1" is shown on the right side of the display.	Note that "1" corresponds to WRITE mode within.	

Operation	Notes	Display
⑤ Press the card key.	Select Card bank No. 2 by pressing the card key twice. (Specifies that edited data is to be written to RAM card memory.)	Internal LED goes out, card LED lights. 
⑥ Press the bank select key.	Tone 11 is in the second tone bank, so the bank selector must be pressed.	
⑦ Press the tone key (No. 11) which is desired in memory.	Tone is written to memory.	Display returns to tone No., LEDs return to normal operating state. 

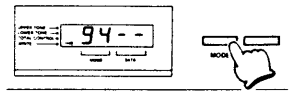
9 Save/Load Operations

Edited tone data can be saved via RAM card (optional RA-100), for recall at a later time.
In order to save or load a program, it's necessary to specify the data to be saved/loaded via the corresponding parameter. These are listed below:

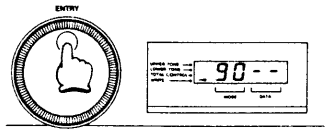
MELODY TONE = 90
CHORD TONE = 91

■ SAVE/LOAD PROCEDURE ■

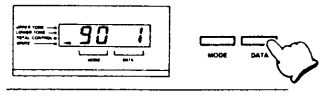
① Press the mode key.



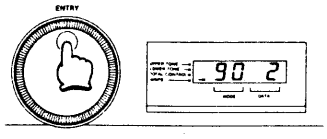
② Turn the entry dial to the desired mode.



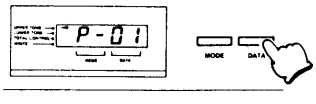
③ Press the data key to enter specified parameter.



④ Turn the entry dial to either SAVE (2), or LOAD (3).



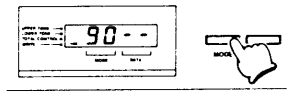
⑤ Press the data key.
- Data is transferred to or from RAM card. (Display is returned to tone No.)



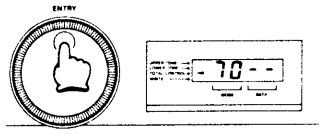
10

To transpose the key of the entire keyboard, refer to the following procedures.

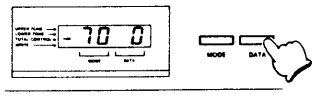
①Press the mode key.



②Turn the entry dial so that display shows parameter "70."



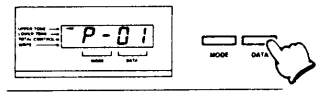
③Press the data key.



④Raise or lower pitch via dial, within the range as shown below:

G	A♭	A	B♭	B	C	C♯	D	E♭	E	F	F♯
−5	−4	−3	−2	−1	0	1	2	3	4	5	6

⑤Press the data key once again to return to normal operating mode. (Display is returned to tone No.)



11 MIDI

MIDI is the acronym for Musical Instrument Digital Interface. It allows synthesizers, sequencers, home computers, rhythm machines etc. to be interconnected through a standard interface.

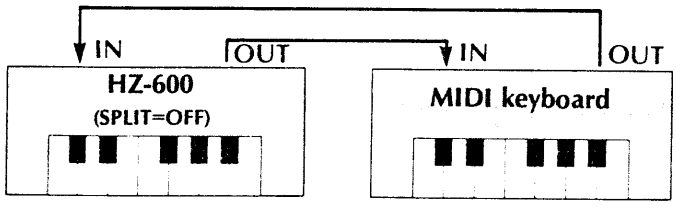
[What MIDI can do]

(1) Remote performance & ensemble performance <Mode A>

By connecting the HZ-600 with another MIDI instrument, performance data can be transmitted/received in a polyphonic format (up to 8 notes in receive mode). In other words, the HZ-600 can be used to control the connected instrument, or, conversely, the other instrument or device can be used to control the HZ-600.

* *In this state, normal performance data such as note ON, modulation ON/OFF, pitch bend, sustain, program change (timbre data) and other data can be transmitted as MIDI messages.*

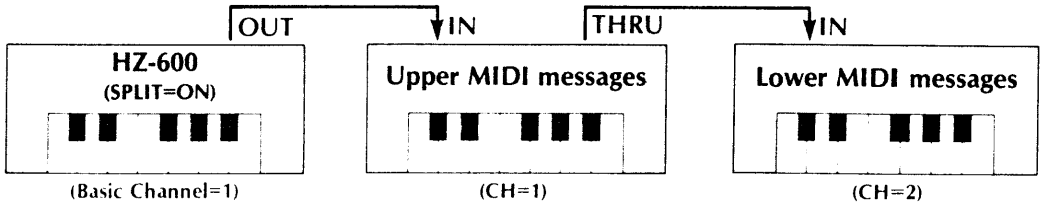
MIDI mode A
<Example connection>



(2) Data receive in key split mode <Mode B>

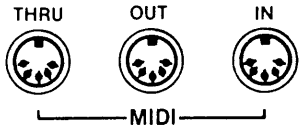
When keyboard split points are set, data for two independent keyboard setups can be transmitted from/received by the HZ-600. In this case, the upper tone keyboard section becomes 4-note polyphonic and the lower tone section is also 4-note polyphonic. Sustain pedal data is shared by both keyboard sections, while modulation ON/OFF and pitch bend data affects only the upper tone section.

MIDI mode B
<Transmission from HZ-600>



[MIDI Terminals]

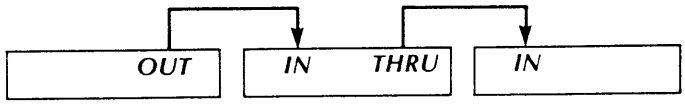
The HZ-600 features 3 different MIDI terminals — MIDI IN, OUT and THRU.



MIDI IN .....Used to receive MIDI messages from external MIDI devices.

MIDI OUT.....Used to send MIDI messages to external MIDI devices.

MIDI THRU .....Used to send messages received at MIDI IN terminal to external devices without altering message signal.



[Transmitted/received MIDI data]

Mode / Message	NORMAL		KEYSPLIT			
			LOWER		UPPER	
	Transmitted	Received	Transmitted	Received	Transmitted	Received
Key ON/OFF, pitch	O	O	O	O	O	O
Modulation wheel	O	O			O	O
Pitch bend wheel	O	O			O	O
Sustain pedal ON/OFF	O	O	O	O	O	O
Note number data (Program change)	O	O	O	O	O	O

"O" indicates transmitted/received messages.

[Setting the MIDI basic channel]

When transmitting MIDI data, it is necessary to set the interconnected devices to the same MIDI basic channel.

MIDI mode A.....Any channel between 1 and 15 can be selected to send data as a polyphonic keyboard.

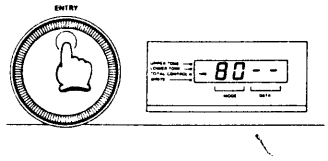
MIDI mode B.....When in the key split mode, any channel between 1 and 15 can be selected as a basic channel for the upper tone keyboard and the external device. The lower tone section must be set to the succeeding number, as shown below:

Upper=CH 12
External Device=CH 12
Lower=CH 13

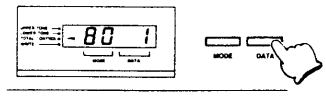
[How to set the basic channel]

①Press the mode key.
- LCD shows the mode No.

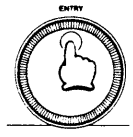
②Select mode No. "80" using the entry dial.



③Press the data key.
- Basic channel is initialized at channel "1".



④Use the entry dial to specify the basic channel.

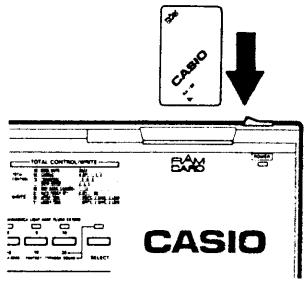


⑤Press the data key.
- Operation returns to normal state and LCD returns to normal tone display.

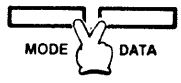
12 RAM Card

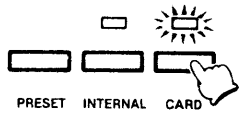
An optional RAM card can be utilized with the HZ-600 to increase its memory potential.
In order to use the card, it's first necessary to format the card via the following procedures.

①Insert the RAM card into the RAM card slot.



②Hold down the mode key and data key, and press the "CARD" tone source key.





- The display shows "CF" during formatting.
- This formats the RAM card, preparing it for use in the HZ-600.
- When the RAM card is not inserted in the unit, RAM card rhythms, tones, and memories do not operate. When an improper card is inserted, an "E" message on the display indicates an error.
- Do not remove the card while formatting, or during SAVE or LOAD operations.

13 Care of Your Keyboard

Please observe the following precautions to assure safety and reliability.

1. Location

To avoid malfunction, do not use this unit in the following locations for extended periods of time:

- In direct sunlight.
- Exposed to extremes of temperature or humidity.
- In sandy or dusty places.

2. Power supply

Use only with rated voltage. Also, to help prevent noise and degraded sound quality, avoid using the same outlet for other equipment — particularly household appliances.

3. Handle gently

Do not drop the unit, as strong shocks will definitely cause malfunctions. Also, sliders and keys are designed to operate with a light touch. Exessive force may cause damage.

4. Keep it clean

Clean the keyboard with a soft cloth dampened with detergent. Never use paint thinner, benzine or other solvents.

5. In case of malfunction...

In the event that your keyboard does not function properly, check whether connections are made correctly, and that the unit is supplied with power (are batteries dead?). If the unit still does not work, contact the original retailer or local Casio dealer. Never attempt to repair the unit yourself.

6. Keep this manual

Store this manual in a safe place for future reference.

14 Specifications

Model:	HZ-600
Number of keys:	61 keys
Polyphonic:	8-note
Upper tone:	Preset—20, Internal—20, RAM card (option)—120
Lower tone:	Preset—10, Internal—10, RAM card (option)—60
Key split:	Split point × 3
Effect:	Stereo chorus, Pitch bender, Key transpose, Modulation wheel
Synthesizing:	**Uppertone edit:** DCO/LFO: SOUND SOURCE 0—31, LFO DEPTH 0—31, LFO WAVEFORM 0—4, LFO DELAY 0—31, LFO SPEED 0—31 VCF: CUTOFF FREQUENCY 0—31, RESONANCE 0—7, ATTACK TIME 0—31, DECAY TIME 0—31, SUSTAIN LEVEL 0—31, RELEASE TIME 0—31, ENVELOPE DEPTH 0—31 DCA: ATTACK TIME 0—31, DECAY TIME 0—31, SUSTAIN LEVEL 0—31, RELEASE TIME 0—31, ENVELOPE DEPTH 0—31 CHORUS: 0—3 **Lowertone edit:** DCO/LFO: SOUND SOURCE 0—15, LFO 0—2 (OFF, ON, DELAY) VCF: CUTOFF FREQUENCY 0—31, RESONANCE 0—7, ATTACK TIME 0—31, DECAY TIME 0—31, SUSTAIN LEVEL 0—31, RELEASE TIME 0—31, ENVELOPE DEPTH 0—31 DCA: ATTACK TIME 0—31, DECAY TIME 0—31, SUSTAIN LEVEL 0—31, RELEASE TIME 0—31, ENVELOPE DEPTH 0—31
Terminals:	Line out [output impedance 0.1 KΩ, output voltage 300 mV (RMS) MAX], Sustain × 1, Foot volume × 1, Phones × 1, AC adaptor (DC 9V), MIDI (IN, OUT, THRU)
Tuning control:	±50 cents (±1/4 tones)
Auto power off function:	6 minutes after last operation (ON/OFF)
Power source:	3-way AC/DC power source; • AC: 100, 117, 220 or 240V (±10V), 50/60 Hz, with optional AC adaptor AD-5. • DC: 6 D size manganese dry batteries. Battery life: Approximately 15 hours (SUM-1). • Car battery: Power taken via optional car adaptor CA-5.
Power consumption:	3 W
Dimensions:	1000(W) × 274 (D) × 93mm (H) 39 3/8" (W) × 10 3/4" (D) × 3 11/16" (H)
Weight:	5.9 Kg (12.8 lbs) including batteries
Standard accessories:	6 "D" size batteries, Music score, Dust cover

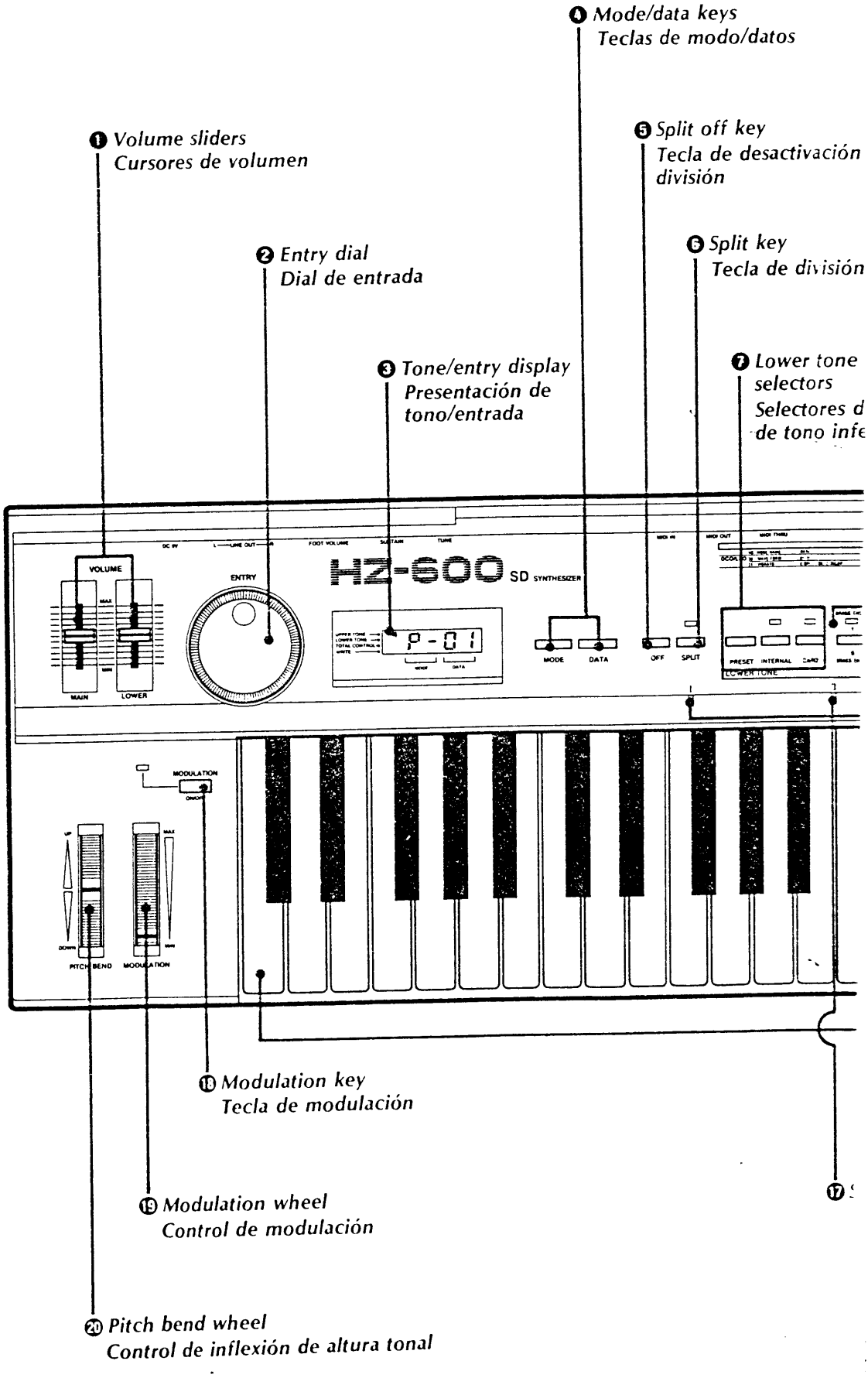
**Design and specifications are subject to change without notice.*

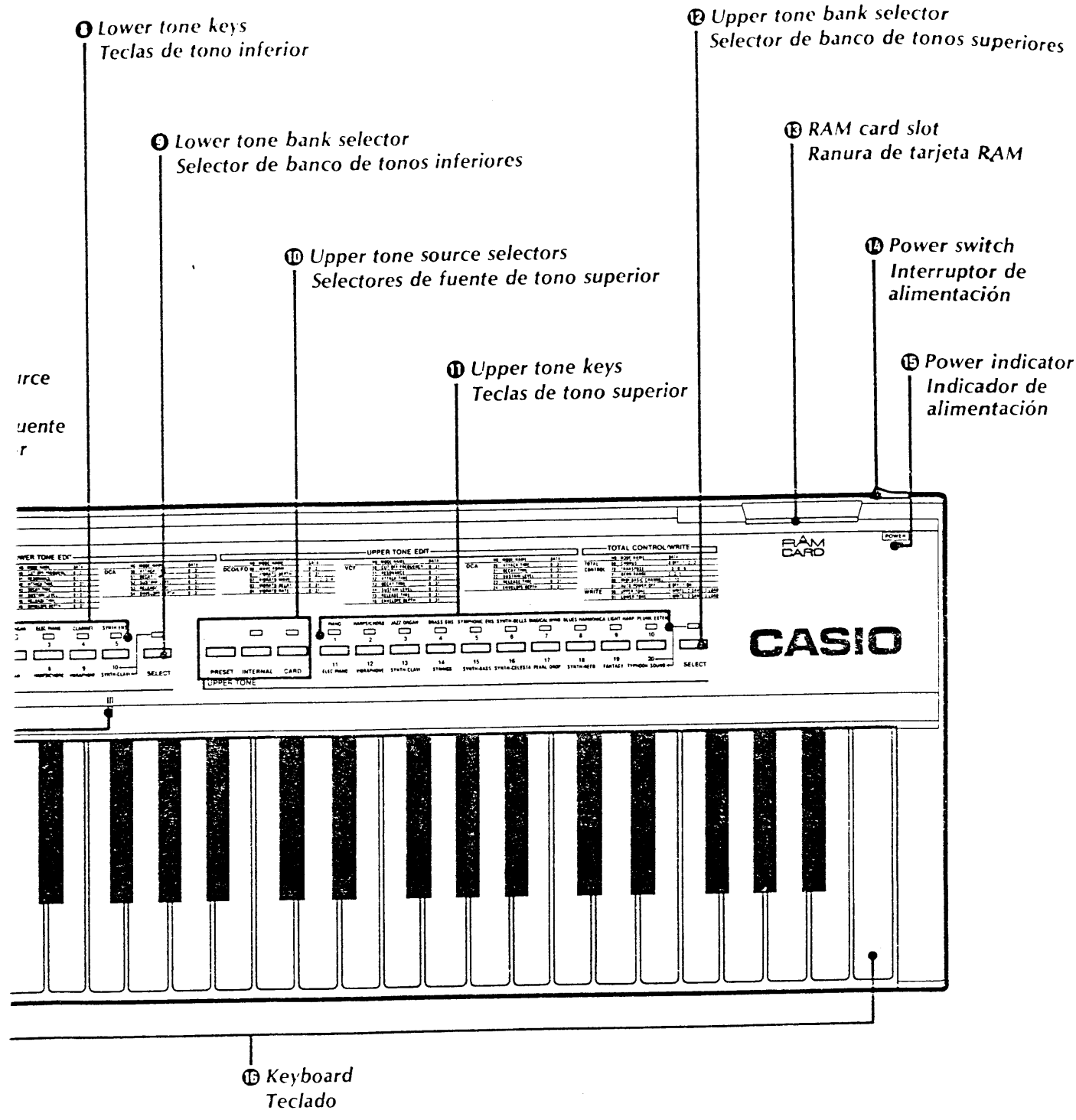
GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A. (not applicable to other areas).

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

..... reorient the receiving antenna
..... relocate the computer with respect to the receiver
..... move the computer away from the receiver
..... plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.


❹ Mode/data keys
Teclas de modo/datos
❶ Volume sliders
Cursores de volumen
❺ Split off key
Tecla de desactivación división
❷ Entry dial
Dial de entrada
❻ Split key
Tecla de división
❸ Tone/entry display
Presentación de tono/entrada
❼ Lower tone selectors
Selectores d
de tono infe
VOLUME
ENTRY
HZ-600 SD SYNTHESIZER
MODE
DATA
OFF
SPLIT
MAIN
LOWER
MODULATION
PITCH BEND
MODULATION
⓲ Modulation key
Tecla de modulación
⓳ Modulation wheel
Control de modulación
⓴ Pitch bend wheel
Control de inflexión de altura tonal



t point indicators
icadores de punto de división